16d
Lib

LOF GLASS

TUF-FLEX®

tempered polished plate glass

doors

doors

AIA File No. 16N-1960

LIBBEY·OWENS·FORD GLASS COMPANY

TUF-FLEX doors of tempered polished plate glass

Tuf-flex tempered polished plate glass doors are the designer's answer to his need for building entrances offering an unobstructed, inviting view of the interior. They are durable and strong enough to withstand heavy traffic, yet provide more than normal protection against burglary or vandalism.

Tuf-flex is tempered polished plate glass made by a process of reheating and sudden cooling. As a result, the outer surfaces are in a state of high compression while the central portion remains in tension, producing a condition highly resistant to breakage.

Tuf-flex is 3 to 5 times stronger than plate glass of the same area and thickness. Yet it retains the same appearance, clarity, hardness and coefficient of expansion as regular polished plate glass.

complete hardware available

Continuous fittings, corner fittings, or combinations of both at top and bottom in aluminum, bronze or stainless steel are applied to the *Tuf-flex* glass to create the type or style of door desired.

Locks and/or bolts indicated on pages 6 to 9 inclusive, may be inserted into these fittings.

Tuf-flex Doors are installed on center hung or offset floor checking hinges with top pivots in head jamb or transom bar. *Tuf-flex* Doors can be adapted to electric floor mat openers, photoelectric controls or electric controlled push-pull bars. Most types of panic hardware can be used with *Tuf-flex* Doors.

push-pull bars

Attractive and distinctive custom made push-pull bars like those shown on pages 10 and 11 add a great deal to the appearance and character of any building entrance using *Tuf-flex* Doors. All bars shown can be used on ½"- and ¾"-thick doors.

Holes in the glass to receive these bars are ⅞" minimum diameter, 6⅞" minimum for center to center and 3½" minimum from edge of door to center of holes.

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specifications

Tuf-flex doors and sidelights (½" or ¾" thickness) manufactured by the Libbey·Owens·Ford Glass Company shall be furnished and installed by this contractor. Doors and sidelights to be of the size and type indicated with fittings of bronze, aluminum or stainless steel as specified.

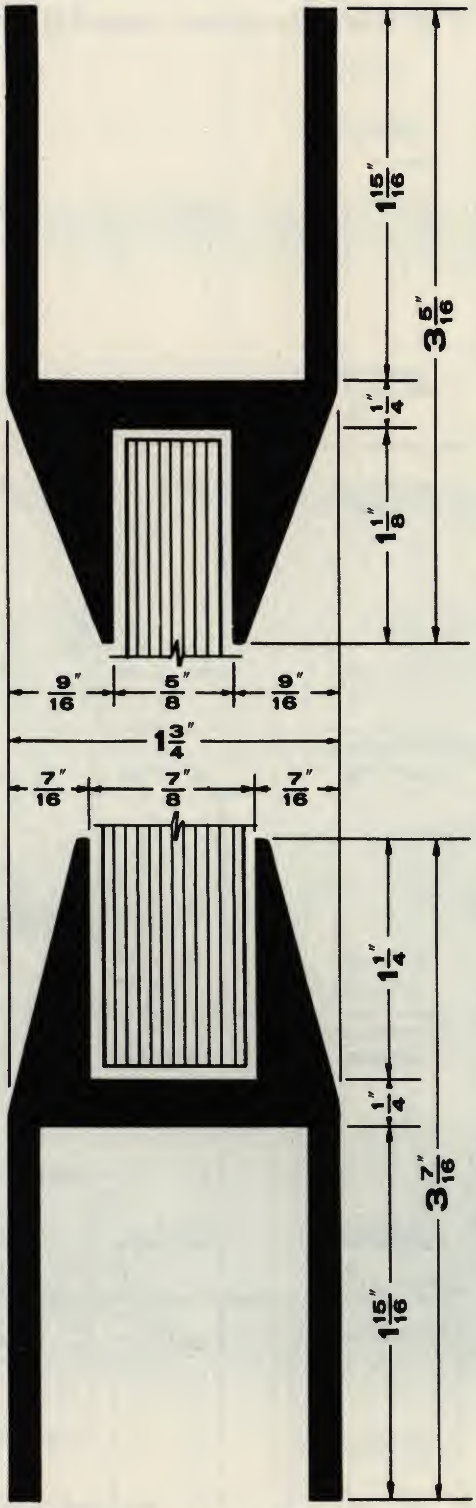
Each door, where noted on plans, to have lock and/or bolt supplied and installed by the manufacturer and to be fabricated to accommodate push-pull bars, checking pivot hinges, door holders, etc. as specified.

All items to be installed as per the manufacturer's recommendations and to the satisfaction of the owner and architect. Libbey·Owens·Ford assumes no responsibility regarding breakage or installation.

fitting sections (full size)

S-06 fittings for $\frac{1}{2}''$ **glass**

S-08 fittings for $\frac{3}{4}''$ **glass**



metals —solid bronze, aluminum or stainless steel
finishes—polished or brushed bronze
polished or brushed chrome
alumilited aluminum
gold anodized aluminum

physical characteristics

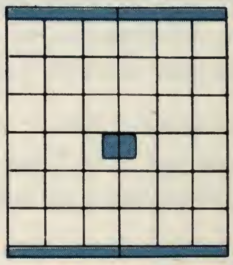
strain pattern The high-heat tempering process to which *Tuf-flex* Glass is subjected results in high tension stresses in the center of the glass and high compression stresses in the exterior surfaces. These compressive and tensile stresses balance each other and are noticeable when the glass is subjected to polarized light. Sunlight from some angles produces polarized light. Therefore, at times and under some conditions the strain pattern may be visible as multi-colored iridescence.

flatness Because of the method of manufacture, *Tuf-flex* Glass is not as flat as ordinary plate glass, particularly along the exposed edges. The warpage tolerance of doors and sidelights is ⅛" up to 84" in height.

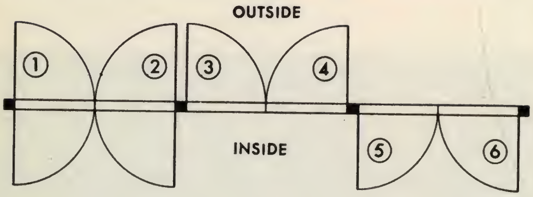
insurance A definite schedule of *Tuf-flex* Door insurance rates may be secured from any insurance agency.

fire retardment Although *Tuf-flex* Glass withstands temperature differentials up to 450° F. it cannot be considered a fire retardment and does not qualify for a Fire Door in the Underwriters' Laboratory Code.

decorative treatment Sandblast designs may be used on *Tuf-flex* Doors but cannot be deeper than 1/64" below the surface of the glass. Full size templates must be furnished when such designs are required.



door swing



The swing of *Tuf-flex* Doors, as shown above, should be indicated when placing orders.

sidelights

Sidelights are available in $\frac{1}{2}$" and $\frac{3}{4}$" *Tuf-flex* Plate Glass with or without fittings. Maximum size 72" x 108". Minimum width with center strike fittings 10" and plain 7".

standard door sizes

(Types p and b-p)

30" x 84"	$29\frac{13}{16}$" x $83\frac{11}{16}$"
36" x 84"	$35\frac{13}{16}$" x $83\frac{11}{16}$"
	$29\frac{13}{16}$" x $83\frac{3}{16}$"*
	$35\frac{13}{16}$" x $83\frac{3}{16}$"*

*used with threshold

Fittings — Alumilited Aluminum.

Locks — Locks in bottom fitting only. These can be keyed alike if noted on order.

Bolts — None are included.

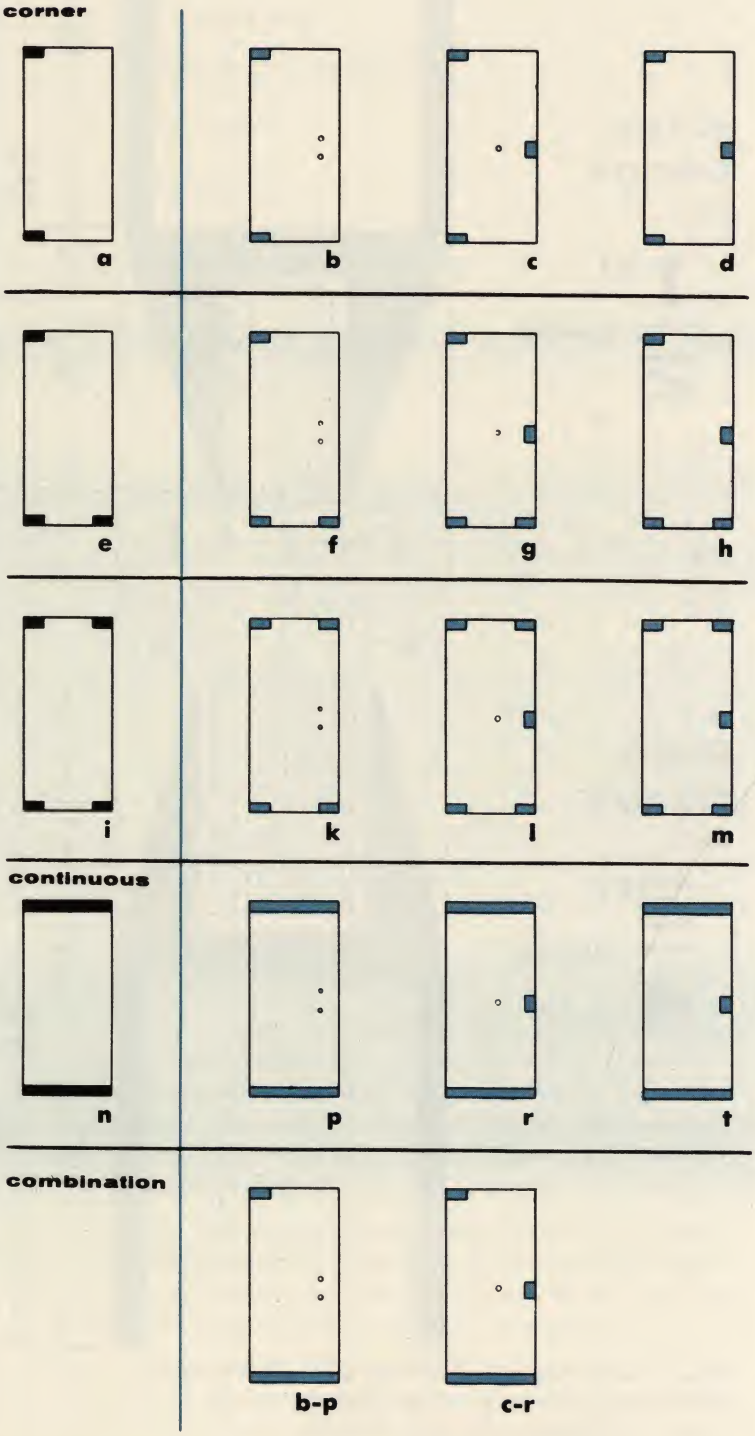
Push and Pull Bars — Holes are for 12" vertical bars only.

Door Holders — No cut-outs or drilling for adapter plates for holders included.

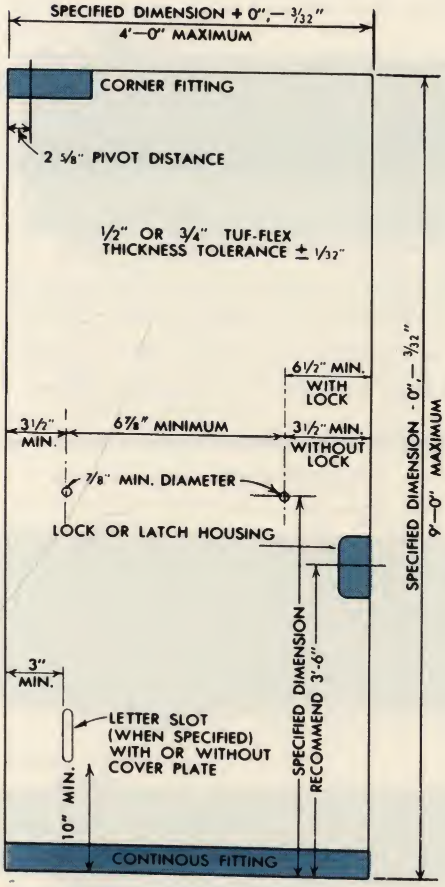
Checking Hinges — All fittings prepared for any type floor hinge excepting LCN Closers. (Off-set hinges not included)

Swing — These doors can be used for all door swings shown in diagram above.

suggested designs

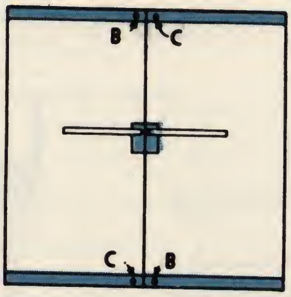


hole limitations


SPECIFIED DIMENSION + 0", – 3/32"
4'–0" MAXIMUM
CORNER FITTING
2 5/8" PIVOT DISTANCE
1/2" OR 3/4" TUF-FLEX THICKNESS TOLERANCE ± 1/32"
6 1/2" MIN. WITH LOCK
3 1/2" MIN.
6 7/8" MINIMUM
3 1/2" MIN. WITHOUT LOCK
7/8" MIN. DIAMETER
LOCK OR LATCH HOUSING
3" MIN.
LETTER SLOT (WHEN SPECIFIED) WITH OR WITHOUT COVER PLATE
10" MIN.
CONTINOUS FITTING
SPECIFIED DIMENSION RECOMMEND 3'-6"
SPECIFIED DIMENSION - 0", – 3/32" 9'–0" MAXIMUM

TYPICAL DOOR SHOWING DESIGN LIMITATIONS AND HARDWARE

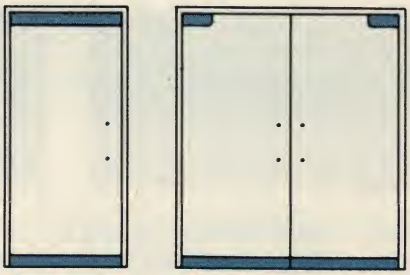
bolt designations



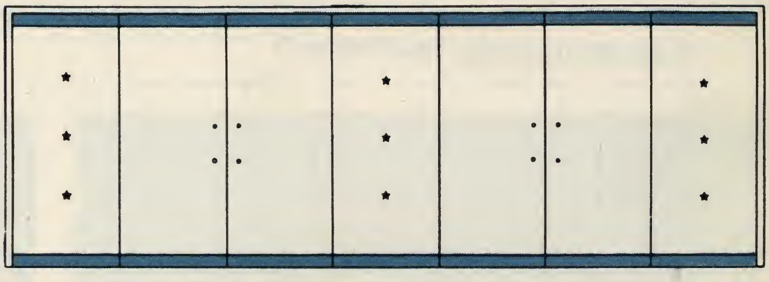
TO DETERMINE "B" or "C" BOLTS: Whether view is looking from outside or inside the B or C bolt designation always coincides with the diagram which shows the side of the door from which the thumb screw bolt heads protrude. Therefore, sketch your door to show bolt heads and compare with diagram. Designate each bolt as in diagram.

typical combinations

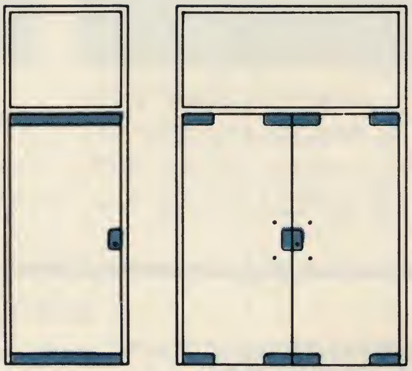
doors



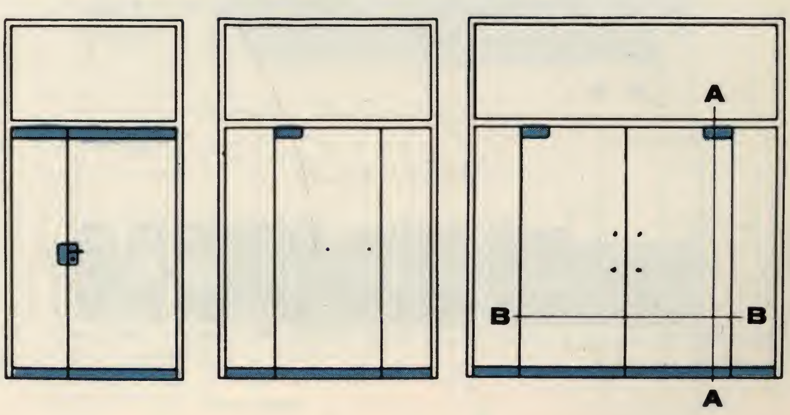
doors and sidelights



with transoms

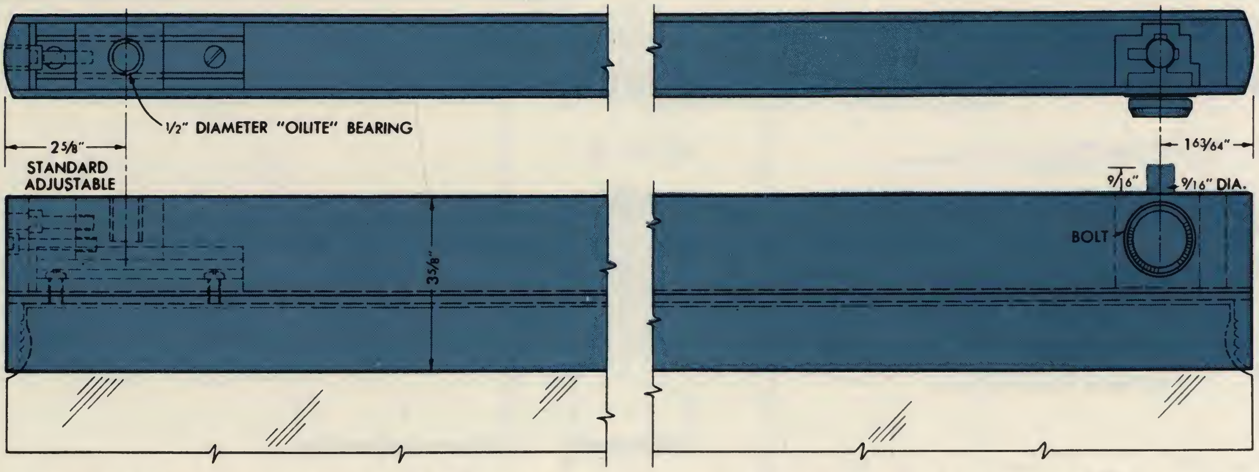


with transoms and sidelights



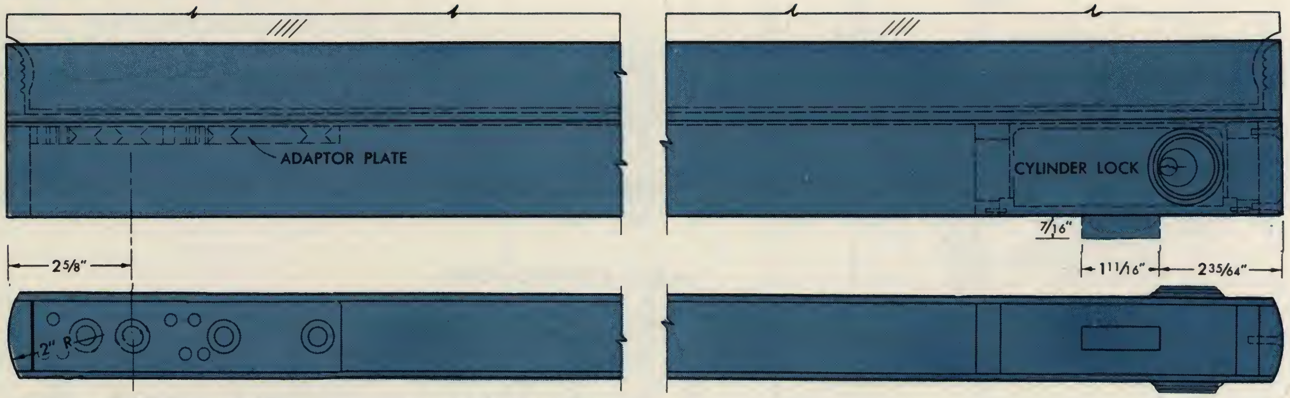
fittings

continuous (top)



S-06 or S-08 top fitting contains the ½" diameter adjustable "Oilite" bearing for the top pivot and may also contain a flush bolt or lock as required. They can also be notched and fitted for Glynn Johnson door holders.

continuous (bottom)



S-06 or S-08 bottom fitting contains an adapter plate which is made to receive the floor type pivot specified. It also may contain flush bolt or lock as required. Both top and bottom fittings can be fitted for time locks when requested.

fitting designations:

	½" door	¾" door
Top Fittings	S-06-T	S-08-T
Bottom Fittings	S-06-B	S-08-B

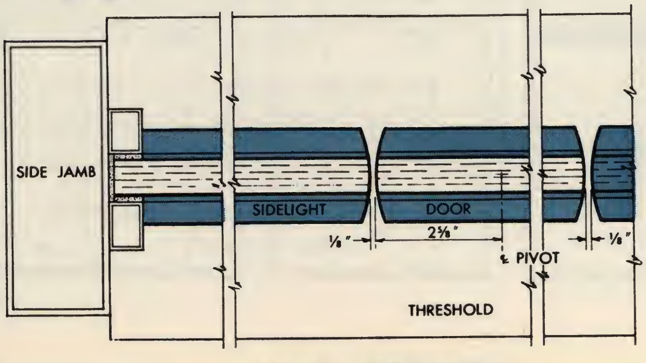
details of typical section

The established clearance at top, sides and between doors and sidelights is ⅛" at each edge. At the bottom of the doors the clearance may be as much as ¼" although 3/16" is preferred.

The dimensional tolerance of *Tuf-flex* glass doors and sidelights is plus nothing, minus 3/32" of the actual over-all size of the doors as ordered.

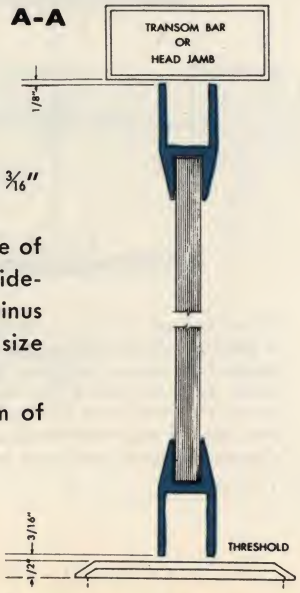
See illustration at bottom of page 5.

B-B



PLAN SECTION

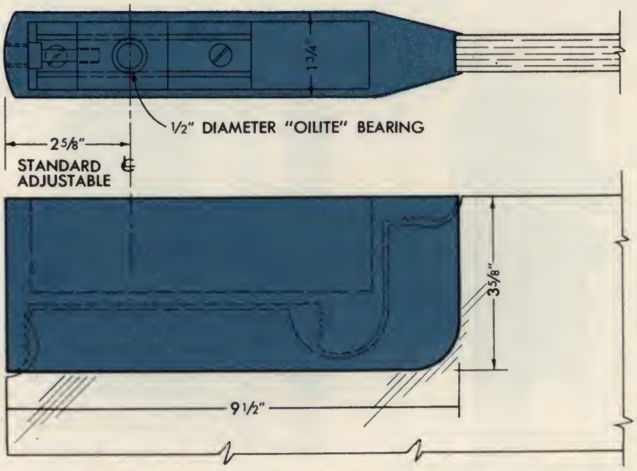
A-A



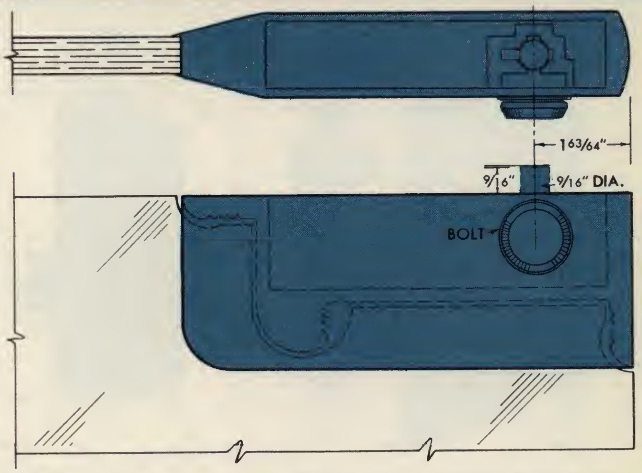
VERTICAL SECTION

TUF-FLEX doors

corner (top)

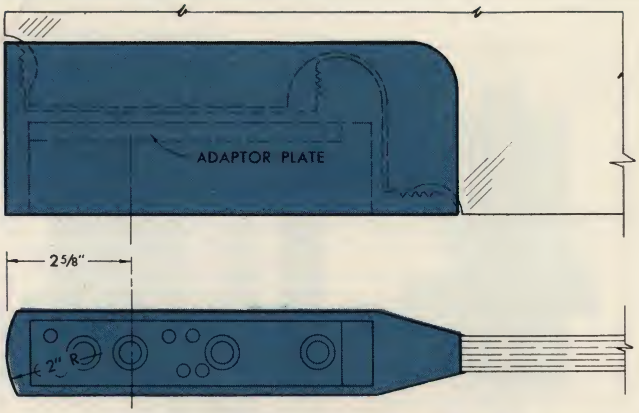


S-21 or S-22 top corner fitting contains adjustable "Oilite" bearing.



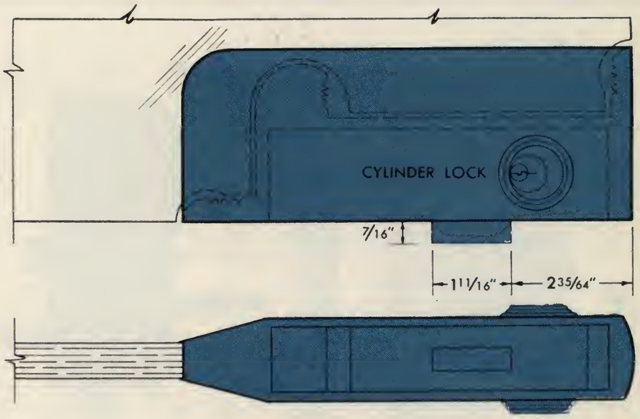
S-21 or S-22 top corner fitting may contain flush bolt or lock as requested.

corner (bottom)



S-21 or S-22 bottom corner fitting contains adapter plate for floor type pivot.

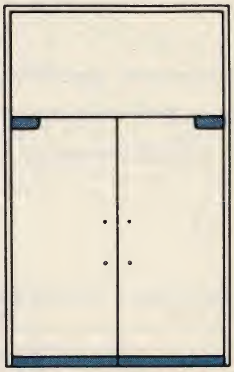
S-21 or S-22 bottom corner fitting may contain flush bolt or lock as required.



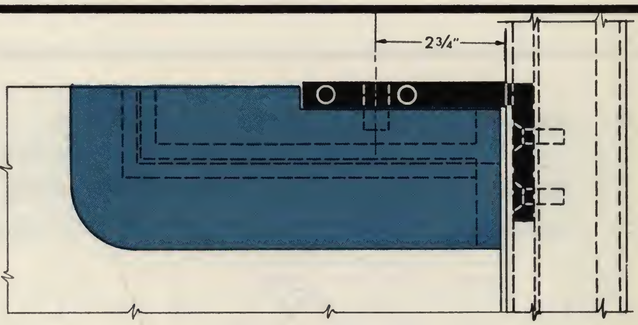
fitting designations:

	½" door	¾" door
Top and Bottom Fittings	S-21	S-22

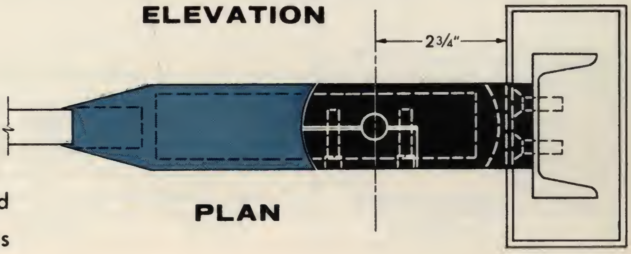
transom and pivot bracket



The transom pivot brackets support the transom glass and serve as the top pivot for the doors when transom bars are eliminated.



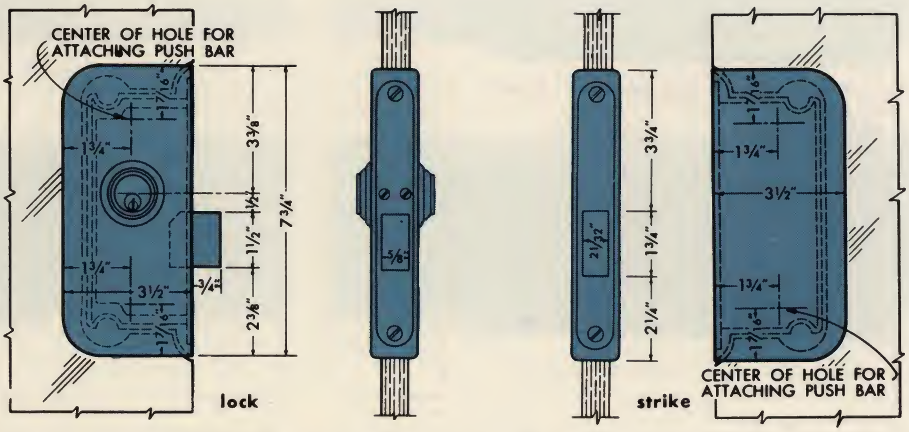
ELEVATION



PLAN

locking hardware *

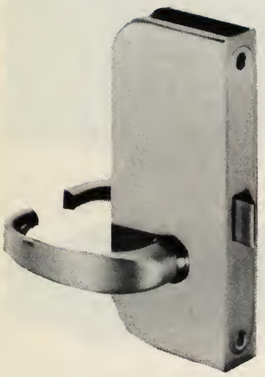
dead lock

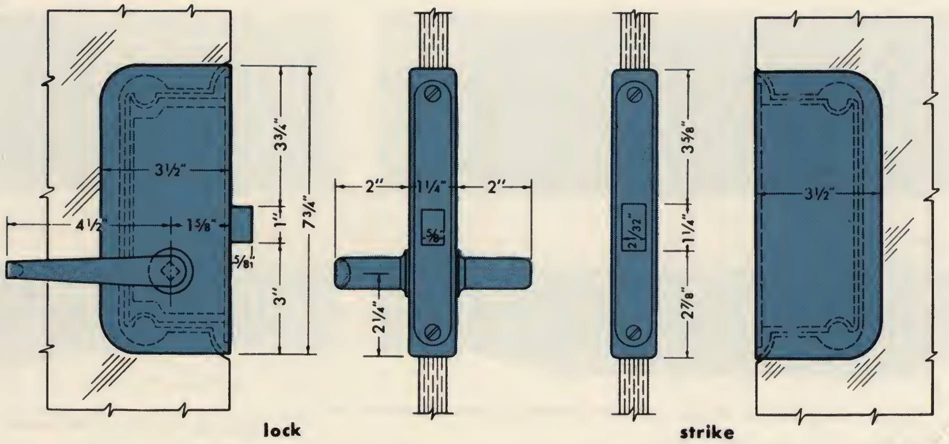


door	lock	strike
¾"	S-10-A	S-11-A
½"	S-12-A	S-13-A

This dead lock fitting has a dead bolt operated by cylinders from both sides and is the only center lock on which one end of a horizontal push bar may be fastened.

latch





door	latch	strike
¾"	S-10-B	S-11-B
½"	S-12-B	S-13-B

This latch fitting operates with lever handles both sides.

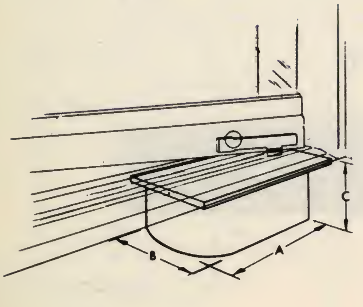
*All locks including S-04 and S-06 locks may be masterkeyed.

operating hardware

floor checking hinges

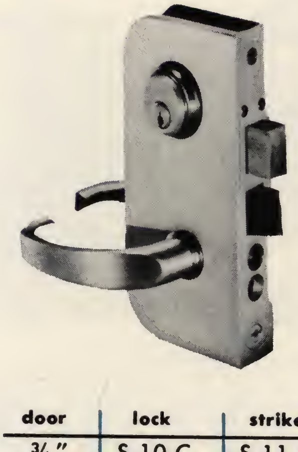
center hung

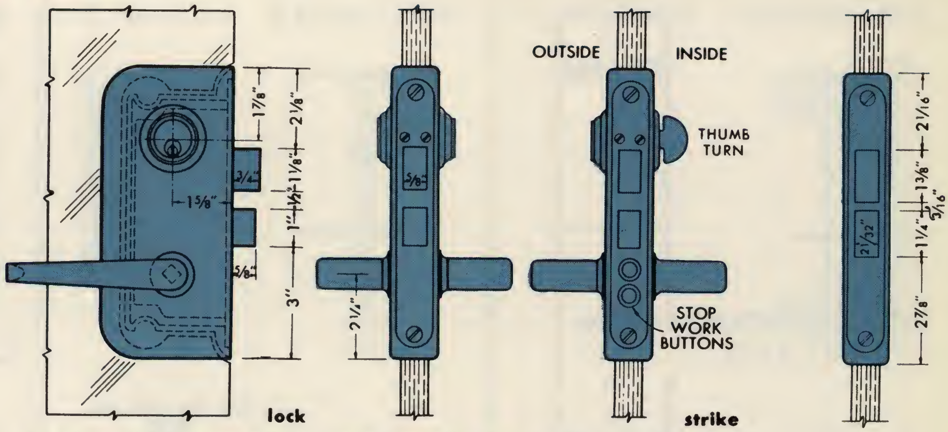
Tuf-flex Doors are installed with floor or overhead checking hinges. Listed are some of the floor type hinges generally used.



	single acting				double acting				pivot distance
	medium	a	b	c	heavy	a	b	c	
Bommer Spring	C-88-½	10¼"	5 1/16"	3 11/16"	C-87	17"	6⅛"	4 1/16"	2 7/16"
Dor-o-matic	260	12¼"	6 1/16"	3⅞"	400	17"	6 1/16"	4⅛"	2⅝"
LCN Closers	6CP	12½"	5⅛"	3⅞"					1⅞"
Rixson Co.	126	11⅛"	5⅞"	4 1/16"	140	17"	6¾"	4 1/16"	2⅝"

latch and dead lock

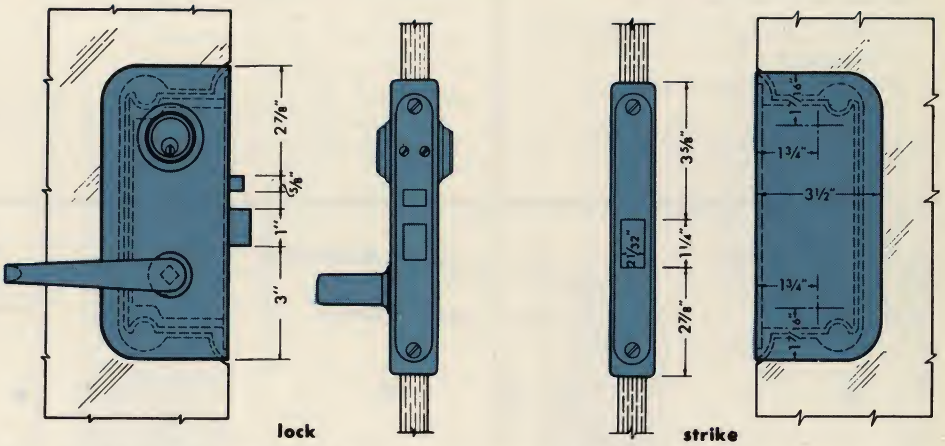




door	lock	strike
¾"	S-10-C	S-11-C
½"	S-12-C	S-13-C

Latch bolt is operated by lever handle both sides and dead bolt is operated by cylinders both sides. (Thumb turn will be furnished on inside face to operate dead bolt in lieu of cylinder when so specified). "Stop Work Button" will be added on special order only. These will lock outside handle only and cylinder key will withdraw both bolts.

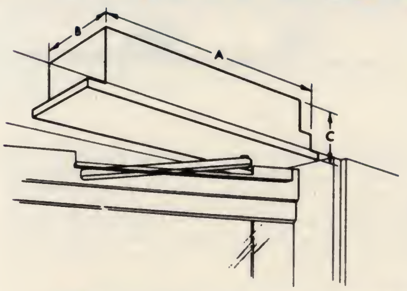
bank lock



The HS4250A — This lock has auxiliary latch with cylinder outside, lever handles both sides and stop work buttons in the edge. For ½" or ¾" doors.

HS4250½A — This lock has auxiliary latch, cylinder both sides, lever handle inside only and no stop work buttons in face. For ½" or ¾" doors.

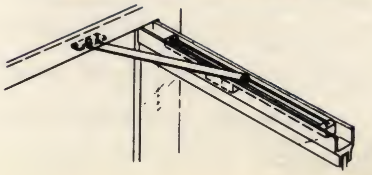
overhead checking hinges center hung



Where floor conditions do not permit the space required for the conventional floor pivot then the overhead type of pivot may be used.

	exterior single acting				exterior double acting				interior double acting			pivot distance
	No.	a	b	c	No.	a	b	c	a	b	c	
LCN Closers	206CP	14½"	3⅞"	4¼"	666	19¼"	4	4½"	16¹⁄₁₆"	3½"	4⅛"	1⅞"

door holder overhead—concealed

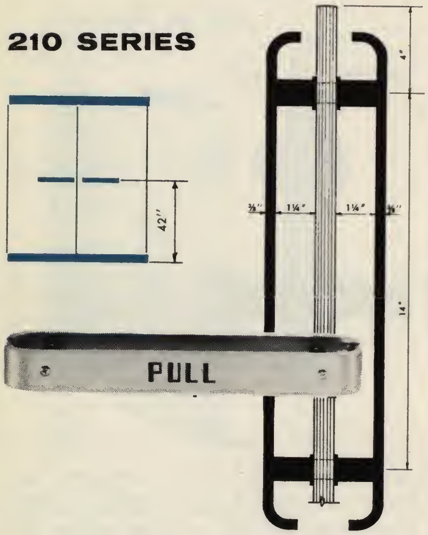


While some manufacturers of door pivots can furnish the holdopen feature, we will furnish and install in *Tuf-flex* Doors the Glynn Johnson door holder when so ordered.

	single acting	double acting
Glynn Johnson	#140	#240

■ custom push-pull bars

210 SERIES

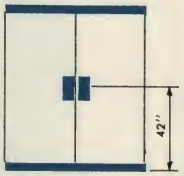


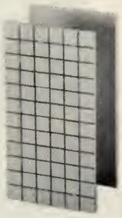
This strong, rather simple bar 2″ wide in alumilited aluminum finish can be used either horizontally or vertically on single acting or double acting doors. The words "push" and "pull" with letters 1″ high may be inscribed on each set of bars.

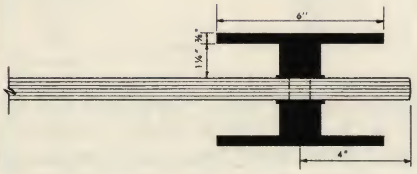
210 As shown with inscribed letters. When ordering, designate if bar is to be used vertically or horizontally.

211 As shown without letters inscribed.

220 SERIES







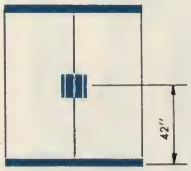
A neat, attractive bar consisting of two flat plates 6″ x 12″ in alumilited aluminum for use on S/A or D/A doors. This bar has hole location of 8″ on center and can be used vertically or horizontally.

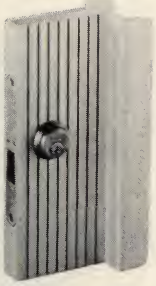
220 Scored with 1″ squares as shown.

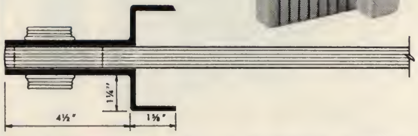
221 Plain — no scoring.

222 Plain with "push" and "pull" inscribed.

230 SERIES







This eye-catching fitting, in alumilited aluminum finish, combines the use of a lock or strike with a push-pull bar. All of the types of locks for center fitting doors shown in our **Tuf-flex** Door Booklet may be used with it. This fitting is 6″ x 12″ and may be used on ½″ or ¾″ doors.

230 Center lock push-pull bar combination, scored as shown.

231 Same as #230 without scoring—(plain).

232 Same as #231, but inscribed "push" and "pull".

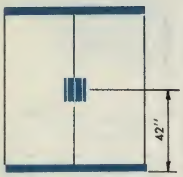
233 Center strike push-pull bar combination, scored as shown to be used with #230 for a pair of doors.

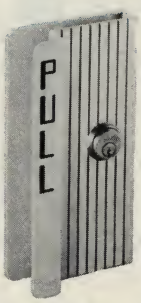
234 Same as #233 without scoring—(plain).

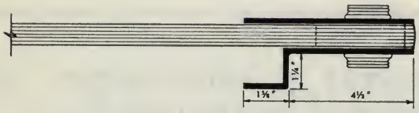
235 Same as #234, but inscribed "push" and "pull".

NOTE: Prices for locks, latches, stop-work buttons, etc., can be obtained from **Tuf-flex** Door Schedule #7, page 6.

240 SERIES







This combination lock or strike push-pull bar center fitting is very similar to #230 except that it can be used **only** on single acting doors. Like its counterpart, it will accommodate all the types of locks used for any of our center fitting doors. Its size is 6″ x 12″ in alumilited aluminum and can be used on ½″ or ¾″ doors.

240 Center lock push-pull bar combination, scored and inscribed as shown.

241 Same as #240 without scoring (plain)—but inscribed.

242 Same as #240 without inscription or scoring—(plain).

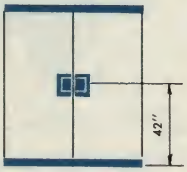
243 Center strike push-pull bar combination scored and inscribed as shown to be used with #240 for a pair of doors.

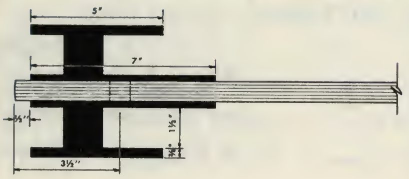
244 Same as #243 without scoring—(plain)—but inscribed.

245 Same as #243 without inscription or scoring—(plain).

NOTE. Price for locks, latches, stop-work buttons, etc., can be obtained from **Tuf-flex** Door Schedule #7, page 6.

250 SERIES





A distinctively attractive push-pull bar made in several variations of finish. It can be obtained with the face plate insert of alumilited aluminum or brushed bronze. This bar may be installed vertically or horizontally on single acting or double acting doors. The size is 7″ x 13½″.

250 Plain alumilited aluminum, as shown.

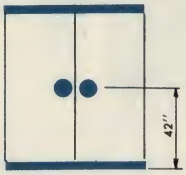
251 Push plate insert same as #250 but inscribed "push" and "pull".

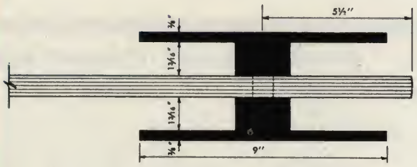
252 Push plate insert scored vertically or in 1″ squares. No inscription.

253 Push plate insert of brushed bronze—(plain).

254 Push plate insert same as #253 but inscribed "push" and "pull".

260 SERIES





This 9″ diameter disc type bar is made in a number of variations. While the one shown is of alumilited aluminum, the face plate insert can be of brushed or polished bronze, inscribed "push" and "pull" or scored with 1″ squares, and can be used on single acting or double acting doors. When ordering, indicate swing of doors and whether they are ½″ or ¾″ thick.

260 As shown, of alumilited aluminum, with 2″ high letters inscribed "push" and "pull".

261 Alumilited aluminum plain—(no inscription).

262 Same as #261 but scored in 1″ squares—(no inscription).

263 Alumilited aluminum backing with brushed bronze, plain plate insert.

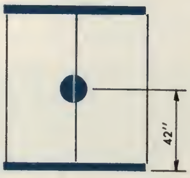
264 Same as #263 with 2″ high letters inscribed "push" and "pull".

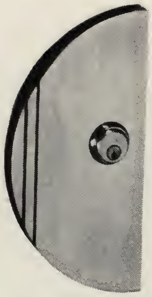
265 Same as #263, but scored in 1″ squares.

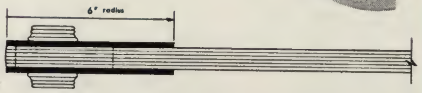
16d
Lib

TUF-FLEX doors

290 SERIES







This center push plate fitting is a combination of push plate and center lock fitting, 12" in diameter, in which may be installed any of our center locks. This fiitting may be used on double acting doors without push-pull bars, but if installed on single acting doors, push-pull bars must be used.

NOTE: When inscribed and used on single acting doors, one side will be inscribed "pull" and the other side "push".

290 Center lock push plate scored as shown.

291 Same as #290 but plain—(without scoring).

292 Same as #291 but inscribed "push" both sides.

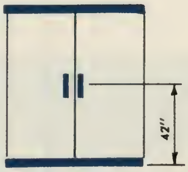
293 Center strike push plate scored and to be used with #290 for a pair of doors.

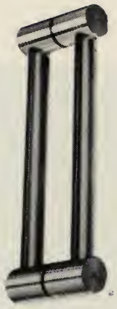
294 Same as #293 but plain—(without scoring).

295 Same as #294 but inscribed "push" both sides.

NOTE. Price for locks, latches, stop-work buttons, etc., can be obtained from **Tuf-flex** Door Schedule #7, page 6.

A SERIES





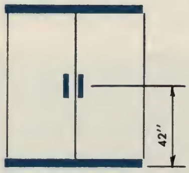
These simple, eye-appealing bars fit into durable aluminum brackets which have been machined to a neat finish. The handles can be attached in either a horizontal or vertical position on **Tuf-flex** Doors.

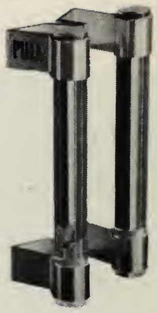
model	length	bar
A12	12"	Lucite
A14	14"	
AL12	12"	Aluminum
AL14	14"	
AX12	12"	Lucite
AX14	14"	
*ALX12	12"	Aluminum
*ALX14	14"	

*To be used horizontally on doors having S10A or S12A locks and S11A or S13A strikes.

NOTE: All "A" bars may be engraved with words "Push" or "Pull" if desired.

C SERIES



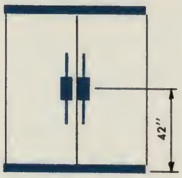


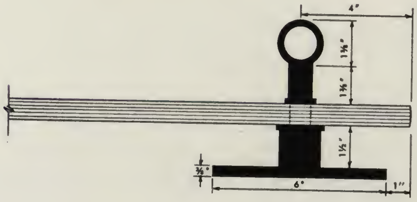
An attractive companion to the "A" bar is this "C" bar, which also can be installed in either a vertical or horizontal position and fits into durable aluminum brackets.

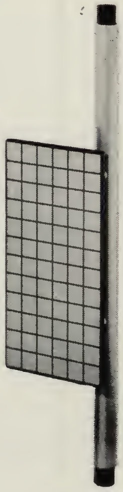
model	length	bar
C12	12"	Lucite
C14	14"	
CA12	12"	Aluminum
CA14	14"	
*CE12	12"	Lucite
*CE14	14"	
*CAE12	12"	Aluminum
*CAE14	14"	

***NOTE:** When ordering engraved bars, the swing of the door must be indicated. The engraving can be furnished on vertical bars only.

270 SERIES







This unique push-pull bar has a long vertical handle for the pull side and a flat push plate for the push side. It is made primarily for single acting doors, but by substituting the long handle for the push plate, it can be used for double acting doors.

It is of alumilited aluminum and can be furnished for ½" or ¾" doors. Push plate is 6" x 12" and the vertical handle is 26" long.

270 Scored push plate with plain anodized vertical handle, as shown.

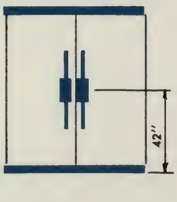
271 Same as #270 excepting push plate is plain—(not scored).

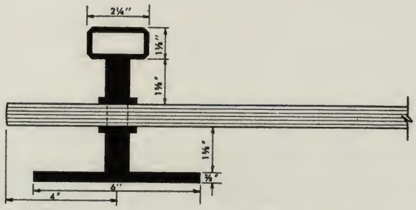
272 Same as #271 excepting push plate is brushed bronze instead of aluminum.

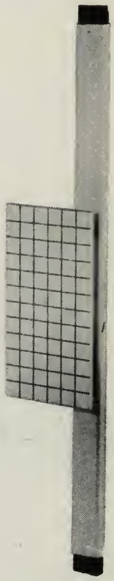
273 Same as #272 excepting push plate is scored with 1" squares.

274 The vertical push bar may be eliminated and any of the above push plate inserts substituted. Consult L-O-F's Toledo Office for special quotation.

280 SERIES







This bar was designed for those who prefer a longer vertical handle of rectangular shape instead of one like #270. This design is primarily for single acting doors. However, like #270, a long handle can be substituted for the push plate and then used for double acting doors. The bars are of alumilited aluminum and can be used on 1½" or ¾" doors. The push plate is 6" x 12" and the vertical bar is 36" long.

280 Scored push plate with anodized vertical handle, as shown.

281 Same as #280 excepting push plate is plain—(not scored).

282 Same as #281 but inscribed "push" and "pull".

283 Same as #281 excepting push plate is brushed bronze instead of aluminum.

284 Same as #283 excepting push plate is inscribed "push" and "pull".

285 Same as #283 excepting push plate is scored with 1" squares.

286 The push plate may be substituted for the vertical bar in any of the above types. Consult L-O-F's Toledo Office for special price.

AIA File No. 16N-1960

district offices

ATLANTA 3, GEORGIA
1001-1007 Whitehead Bldg.,
223 Peachtree Street, N.E.
Jackson 4-5239

BOSTON 16, MASSACHUSETTS
526 Statler Building,
20 Providence St., Park Sq.
Hubbard 2-0100

BUFFALO 3, NEW YORK
2010 Rand Building,
14 Lafayette Square
Mohawk 7636

CHICAGO 3, ILLINOIS
Room 1400-1410,
120 So. LaSalle St.
Central 6-2490

CINCINNATI 2, OHIO
912 Enquirer Building,
617 Vine Street
Main 1-6174

CLEVELAND 13, OHIO
1202 Terminal Tower Bldg.
Main 1-7180

DALLAS 1, TEXAS
1402 Tower Petroleum Bldg.
Riverside 1-4026

DAYTON 2, OHIO
901 Third National Bldg.
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DENVER 2, COLORADO
1414 Mile High Center Bldg.,
Alpine 5-0395

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625 Circle Tower Building,
5 East Market Street
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910 Dwight Building,
1004 Baltimore Street
Victor 2-5360-61

LOS ANGELES 5, CALIFORNIA
1101 Tishman Building,
3440 Wilshire Boulevard
Dunkirk 8-0641

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837 Sterick Building,
8 North Third Street
Jackson 7-7589

MILWAUKEE 3, WISCONSIN
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161 West Wisconsin Avenue
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7-4122

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909 East Main Street
Milton 3-3034

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411 N. 7th Street
Central 1-9863

SAN FRANCISCO 5, CALIF.
635 Rialto Building,
116 New Montgomery Street
Sutter 1-4360

SEATTLE 1, WASHINGTON
1301 Tower Building,
Mutual 2-7047

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608 Madison Avenue
Cherry 2-5781

WASHINGTON 6, D. C.
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